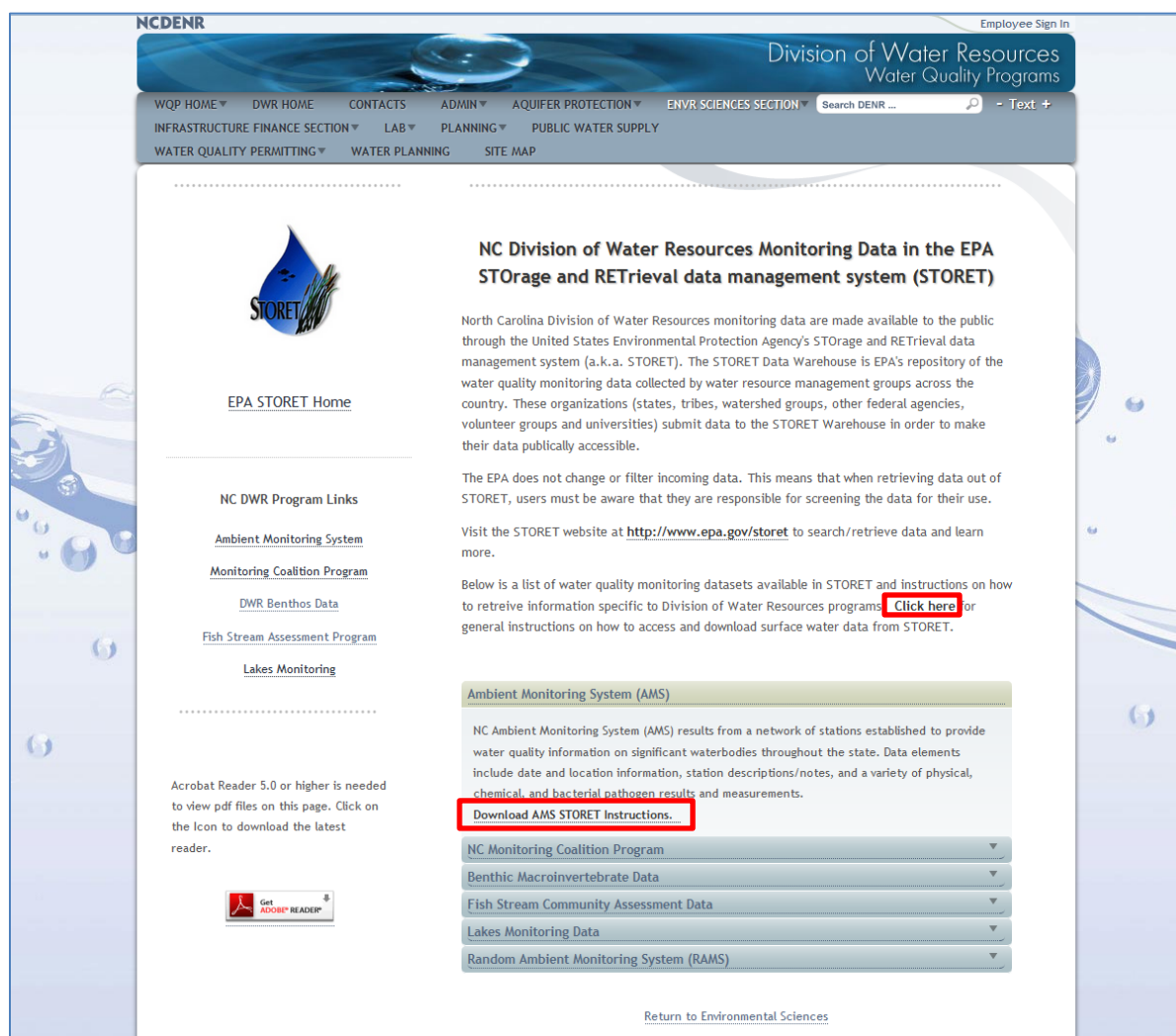


Retrieving Surface Water Quality Data from STORET

The North Carolina Division of Water Resources' surface water monitoring data are made available to the public through the US Environmental Protection Agency's STOrage and RETrieval (STORET) data management system, at www.epa.gov/storet/.

Specific instructions on the retrieval of data for each program can be found on the DWR Environmental Sciences Section STORET webpage: <http://portal.ncdenr.org/web/wq/storethome>.



The screenshot shows the NC Division of Water Resources STORET Home page. The header includes the NC DENR logo, the Division of Water Resources Water Quality Programs title, and a navigation menu with links like WQP HOME, DWR HOME, CONTACTS, ADMIN, AQUIFER PROTECTION, ENVR SCIENCES SECTION, INFRASTRUCTURE FINANCE SECTION, LAB, PLANNING, PUBLIC WATER SUPPLY, WATER QUALITY PERMITTING, WATER PLANNING, and SITE MAP. A search bar and 'Employee Sign In' link are also present.

The main content area features the STORET logo and the title 'NC Division of Water Resources Monitoring Data in the EPA STOrage and RETrieval data management system (STORET)'. The text explains that North Carolina Division of Water Resources monitoring data are made available to the public through the EPA's STORET system. It mentions that the STORET Data Warehouse is EPA's repository of water quality monitoring data collected by water resource management groups across the country. These organizations (states, tribes, watershed groups, other federal agencies, volunteer groups and universities) submit data to the STORET Warehouse in order to make their data publicly accessible.

The EPA does not change or filter incoming data. This means that when retrieving data out of STORET, users must be aware that they are responsible for screening the data for their use.

Visit the STORET website at <http://www.epa.gov/storet> to search/retrieve data and learn more.

Below is a list of water quality monitoring datasets available in STORET and instructions on how to retrieve information specific to Division of Water Resources programs. [Click here](#) for general instructions on how to access and download surface water data from STORET.

The page lists several datasets with dropdown menus for selection:

- Ambient Monitoring System (AMS)
- NC Monitoring Coalition Program
- Benthic Macroinvertebrate Data
- Fish Stream Community Assessment Data
- Lakes Monitoring Data
- Random Ambient Monitoring System (RAMS)

At the bottom, there is a link to 'Return to Environmental Sciences'.

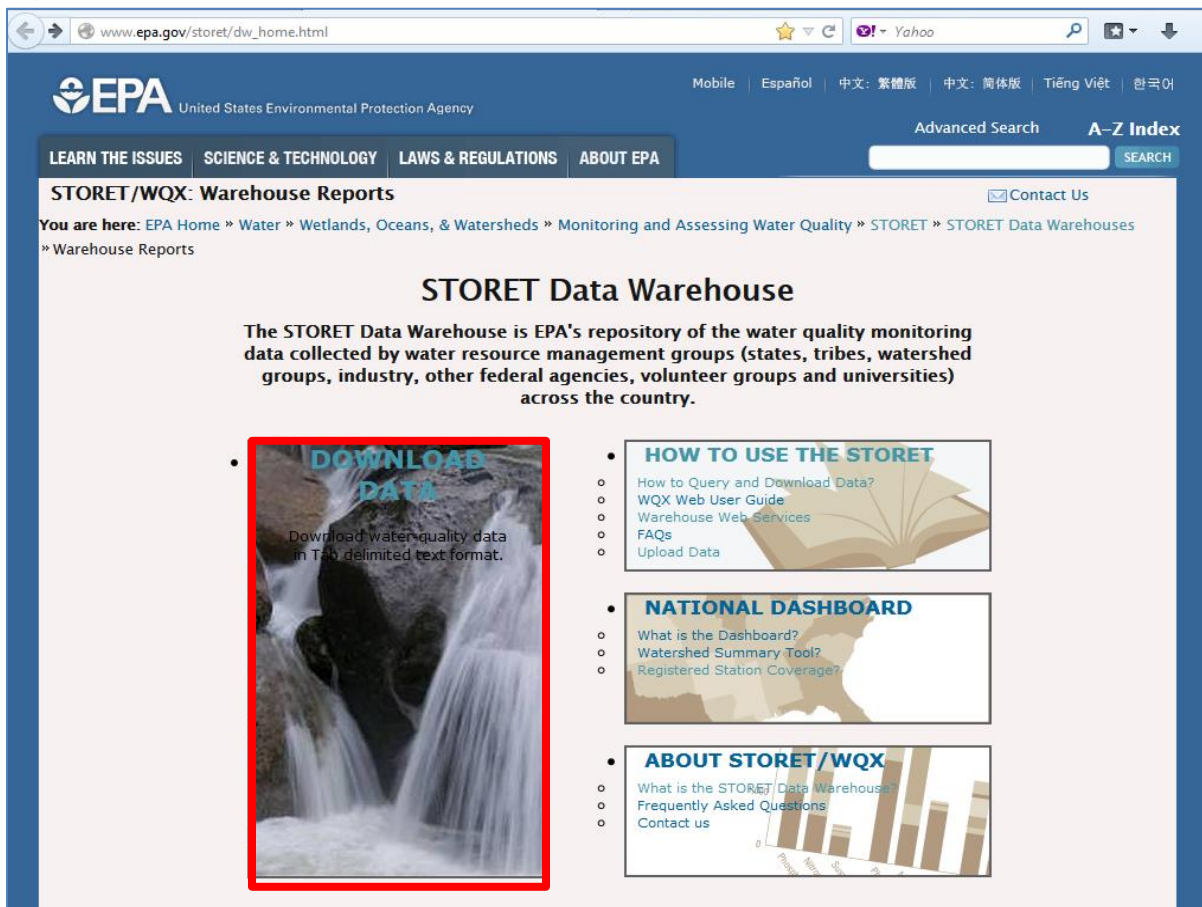
Getting Started

From the STORET homepage (www.epa.gov/storet/), click on “**Download Water Quality Data**” in the Key Links menu on the right-hand side of the page. All DWR data are stored in the modernized version of STORET. Click on “**Browse or Download Modernized STORET Data**”, the big yellow button located in the middle of the page. This will open the STORET/WQX: Warehouse Reports page (Figure 1), where you can select to download data.

Search for Results

1. From the STORET/WQX: Warehouse Reports page (Figure 1), click on “**Download Data**” (the box with waterfall image- highlighted in red below). The STORET Central Warehouse- STORET Data Report page will open (Figure 2).

Figure 1 – STORET Data Warehouse



2. From the STORET Central Warehouse- STORET Data Reports page, you can search by **Geographic Location** (State/County, Latitude/Longitude or Drainage Basin/HUC), **Organization**, **Station & Project**, **Station Type**, **Date**, **Activity Medium**, **Activity Intent and Community** and/or **Characteristic** (i.e. parameter, see page 9). Once the search criteria have been entered, click “**Results Download**” at the bottom of the page.

NOTE: To obtain data from specific station(s), choose “Select and Search Organization and Station (Option 3)”. Be sure to select the correct Organization ID. Search for a specific station in the “Search String” box. Selected stations will appear in the box below the “Search Stations” button. Multiple stations can be selected.

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STORET Central Warehouse

STORET Data Report

Geographic Location

Select a single type of location search that you wish to perform (state/county, latitude/longitude, or HUC). Then enter the corresponding search criteria.

State/County
(Option A)

State Name
ALL

County Name
ALL

Look Up

Select one or more state(s)
(Option B)

ALL
ALABAMA
ALASKA
AMERICAN SAMOA
ARIZONA
ARKANSAS
BAKER ISLAND
CALIFORNIA
COLORADO
CONNECTICUT

Latitude/Longitude
(in decimal degrees)
(Option C)

North Limit
90 N

West Limit
180 W

East Limit
0 W

South Limit
0 N

Click image for interactive map

Select one or more Drainage Basin/HUC
(Option D)

Use the Look Up button to create a list of Cataloging Unit(s)

HUC CODE	HUC NAME
----------	----------

Look Up

Clear Selected

Clear All

Select and Search Organization and Station
(Option 3)

Select an Organization and a Search Type, then enter a Search String and click "Search Stations".

ORG ID
Select an Organization

ORGANIZATION NAME

Search Type

☒ Search by Station ID

☐ Search by Station Name

☐ Search by Station Alias

Select Station Alias Type STANDARD

Look Up

Search String

Search Stations

ORG ID	STATION ID	ALIAS TYPE	STATION ALIAS	STATION NAME
--------	------------	------------	---------------	--------------

Clear Selected

Clear All

Select a Single Organization and Project
(Option 4)

Step 1: Select a Single Organization from the List

ORG ID
Select an Organization

ORGANIZATION NAME

Step 2: Select a Single Project by Clicking "Look Up"

Select a Project

Look Up

3. The Result Search Summary page will open. This page tells you how many results are in the warehouse for the search criteria entered (Figure 3). At the bottom of the page, select which fields you would like reported in addition to the default fields (Figure 4).

Figure 3 – Results Returned

STORET Central Warehouse

Number of Results Returned: 1,836

Search Criteria

State:
ALL

County:
ALL

Station(s):
21NCMONITORING Q733

Station Type(s):
ALL

Activity Start Dates:
ALL

Intent(s):
ALL

Community Sampled:
ALL

Medium:
ALL

Characteristic(s):
ALL

Select Report Type(s):

☒ REGULAR (1836 record(s)) ☐ BIOLOGICAL (0 record(s)) ☐ HABITAT (0 record(s))
☐ METRIC (0 record(s)) ☐ INDEX (0 record(s))

Select Included Metadata:

☐ ACTIVITY GROUP

• Select 'Back' to modify search parameters and refine your query.

• Select Batch Processing to generate the report offline based on your current selections.

• You may customize the content of your report by selecting Data Elements below.

<<Back

Batch Processing

Please select the appropriate user profile: Public

Please enter your email address:

Please specify three characters to prefix your report name:

→ Immediate Overnight

Note: immediate batch processing is limited to data requests with results up to 1000000. Any immediate batch request over the limit will be automatically scheduled as Overnight Batch.

Note: Download files will exceed maximum limits for spread sheet applications (ie. EXCEL - Worksheet size: 65,536 Rows.)

Figure 4 – Station Default Fields

The screenshot displays a web-based interface titled "Select Data Elements for Report(s)". It features three columns of fields, each with a checkbox. The first column contains fields 1 through 63, the second column contains fields 64 through 187, and the third column contains fields 189 through 230. Two fields are highlighted with red boxes: "Station Name" (field 3) in the first column and "Activity/Result Comment*" (field 82) in the second column. At the bottom of the interface, there are three buttons: "Select All", "Clear All", and "Restore Defaults". The "Select All" button is also highlighted with a red box. Below the buttons, there is a note: "*Element Group. Click to see the Element list".

*NOTE: The Minimum fields to have checked in addition to the default fields include: **Station Name** and **Activity/Result Comment**. If you're unsure of exactly which fields to select, click "**Select All**". Unnecessary information can always be deleted later.*

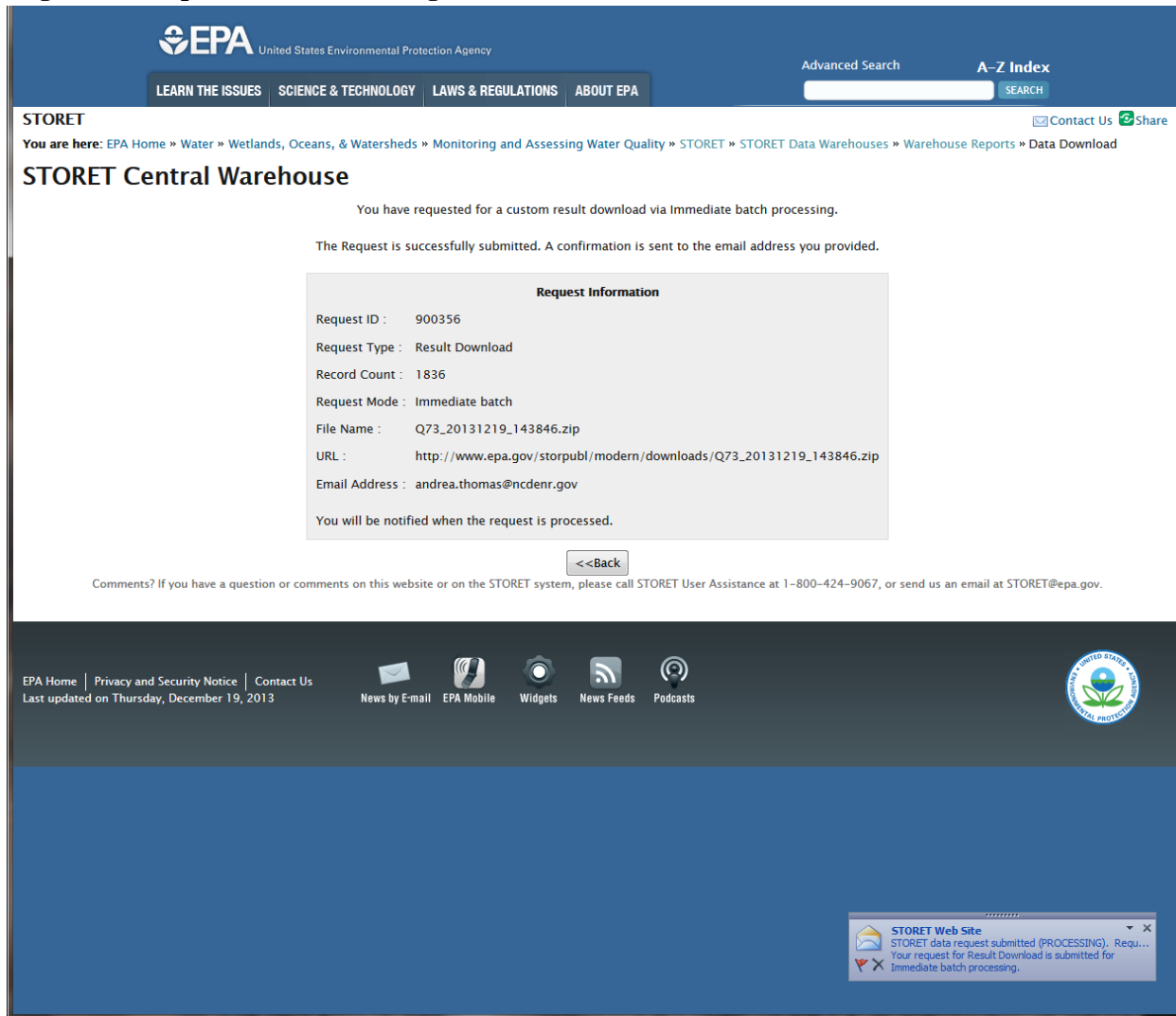
All data requests are completed by batch processing, which requires the requestor to enter a **valid email address** and a **three-character prefix** for the report (Figure 3). Click either "**Immediate**" or "**Overnight**" under **Batch Processing**. Immediate processing is available for searches up to 1,000,000 results. During peak demand, requests may take longer to complete. Overnight processing is preferred for larger reports and reports are available the next day. All results are sent directly to the email entered.

4. The Results Data Request Information page (Figure 5) will then open. This page confirms that the custom result download request was received. The requestor will also receive an email confirming that the request has been submitted. The subject of this email will be “STORET data request submitted (PROCESSING)”.

NOTE: Emails from STORET may be sent to your junk mail. Please check your junk mailbox regularly when requesting data from STORET.

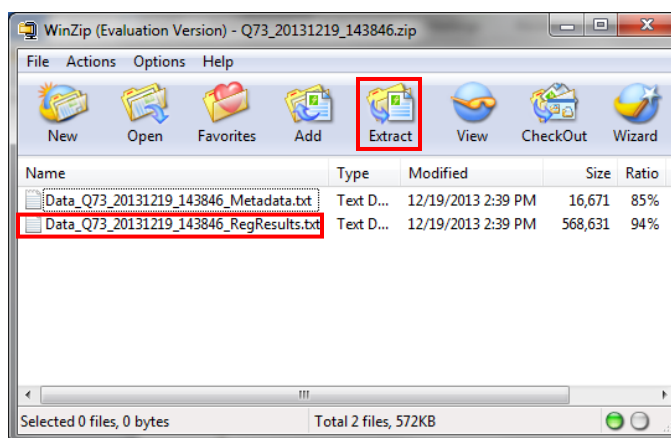
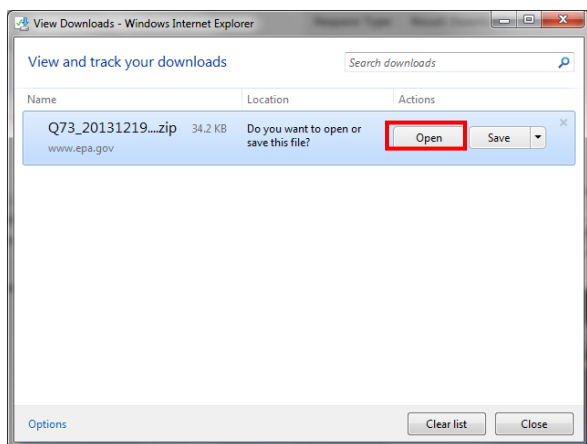
NOTE: The (PROCESSING) email includes search criteria and a record count to confirm the information requested.

Figure 5 – Request Information Page



Once your request is completed, you will receive another email with a link to download your data file. The subject of this email will be “STORET data request status (COMPLETED)” (Figure 6). Click on the link in this email. When prompted to open or save the file, click “open”. This is a compressed file that can be opened using WinZip® or another file compression software. The compressed file will include the data requested as a text file (Data_XYZ_yyyymmdd_hhmmss_**RegResults**.txt) and an additional text file containing the metadata (Data_XYZ_yyyymmdd_hhmmss_**Metadata**.txt). Extract the results file to a location of your choosing.

Figure 6 – STORET data request email and subsequent steps to retrieve data



Downloads with less than 65,000 records can be opened in Excel[®]. Larger downloads must be opened in Access[®] or other statistical software packages.

*NOTE: See **View Your Saved Results in Excel[®]** below for help opening text files in Excel[®].*

View Your Saved Results in Excel®

After saving text files, open Excel®. Go to “Open” file. Find the text file on your computer (make sure txt files are displayed in the file type dropdown menu). Open the text file and the text import wizard should automatically start.

1. You will be asked if the file is delimited or fixed – choose “**delimited**”, click “**Next**”
2. Choose Delimited as “**Tab**”, click “**Next**”
3. Click “**Finish**”

Each dataset received from STORET is in a stacked format (i.e., each column contains groups of information). Depending on intended use of the data, it may be necessary to change the table’s orientation. This can be accomplished in Excel using the “invert table” function or in JMP with the “split” function. Both of these programs can split data into a separate column for each group.

Characteristic Search Tips

When searching for a Characteristic, if you enter a name and no characteristics are found then try another portion of the characteristic. Example- Search for **fecal coliform**- If you enter “**coliform**” two results are found but fecal coliform is not a choice. If you enter “**fecal**” then you are provided with two choices to include fecal coliform.

Each program has provided a list of common characteristic names associated with their data as additional data reference sheets. These data reference sheets are posted under each program on the DWQ Environmental Sciences Section STORET webpage: <http://portal.ncdenr.org/web/wq/storethome>.